

March 8, 2010

U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street,
San Francisco, California 94105

Attention: Mr. Wayne Praskins

**RE: COMMENTS REGARDING THE REMEDIAL INVESTIGATION /
FEASIBILITY STUDY REPORT, B.F. GOODRICH SUPERFUND SITE,
RIALTO, CALIFORNIA**

Thank you for the opportunity to comment on USEPA's Remedial Investigation / Feasibility Report, B.F. Goodrich Superfund Site, Rialto California (CH2MHill, January 25, 2010)(RI/FS). These comments are submitted by GeoLogic Associates on behalf of the County of San Bernardino ("County").

In our view, the report provides a good initial characterization of existing perchlorate and trichloroethene impacts to groundwater associated with the "160-acre parcel" area (i.e., the Eastern Plume). The report also identifies an appropriate remediation strategy to intercept, contain and treat high concentration impacts just downgradient of the 160 Acre Site. Addressing these releases near the terminus of the Intermediate Aquifer is particularly appropriate given that impacts will be more difficult to address as they move downgradient and become more subject to changes in the regional flow stresses. These measures should also minimize the time required for cleanup of impacted areas downgradient of Rialto-02.

We further agree that the remedial design phase should include as an element some additional field work and modeling to define the optimal location and pumping strategies for this remedial program. Further, it is our expectation that a more optimized location for the additional extraction well will enable containment under a wider range of conditions than is assumed in the RI/FS. We also understand and agree with the operable unit approach set forth in this document, which contemplates the potential need for additional remedial action to address the distal end of the Eastern Plume. Finally, we endorse and agree with the approach of managing the Eastern Plume as separate and distinct from the Western Plume, as EPA has proposed in this document.

We offer the following additional comments on the RI/FS report.

◆ **Section 1.5.2 Local Hydrogeology**

Page 1-10, paragraph 1.

We note that the text refers the reader to Figures 1-5 and 1-6 for the location of well MW-4 and its relationship to the BC Aquitard, but that those figures do not currently identify that well. Similarly, Figure 1-4 does not appear to identify the

location of Rialto-02. Also, the text refers to the wells installed by EPA as “MW” wells while the figures appear to reference those wells as “MP” wells.

◆ **Page 1-10, paragraph 2.**

The report notes that the groundwater flow gradient in the northwestern and central portions of the RCB is 0.003 foot per foot (ft/ft) to 0.012 ft/ft. This range appears to represent gradients in both the flatter regional aquifer (currently approximately 0.0016 ft/ft near Rialto Well No. 3) and the steeper intermediate aquifer (typically about 0.015 to 0.020 ft/ft southwest of the 160-acre area), based on field measurements of each aquifer. We suggest clarifying the text to distinguish these aquifer gradients, since groundwater flow gradients have important implications with respect to contaminant migration.

◆ **Page 1-10, paragraph 4, last sentence.**

Text references Figure 1-6 but the correct reference appears to be Figure 1-4.

◆ **B.F. Goodrich Site**

Page 1-11, paragraph 4, last sentence.

The text notes that the significant spiking of perchlorate and TCE levels in response to a rise in groundwater levels indicates that a large mass of perchlorate and TCE remains in the Intermediate Aquifer. We agree and note further that this spiking also suggests that significant perchlorate and TCE mass remains within the vadose zone beneath that site.

◆ **Section 1.7.1 Contaminant Identification**

Page 1-13, First paragraph of section.

Text indicates that benzene, carbon tetrachloride, chloroform, methylene chloride and TCE comprise the detected VOCs. EPA's list of detected VOCs for its January 2008 sampling round is considerably longer and includes 22 VOCs in addition to TCE. However, with 3 low-level exceptions, all of the other 22 VOCs were detected at trace concentrations. Review of the sampling results reported by GeoSyntec Corporation for the BF Goodrich "PW" wells indicates that these trace-level VOC detections are also inconsistent over time. Considering the nature of these VOCs, it seems probable that many, if not most, of the low- and trace-level VOC detections are associated with field sampling conditions (e.g., generator exhaust) or laboratory processes. This distinction is important because certain VOCs are consistently detected in Western Plume but are essentially absent from the Eastern Plume. These unique VOCs in the Western Plume are a strong indication that the Western Plume is not commingling into the Eastern Plume.

◆ **Section 2.2.1 Potential Chemical-Specific ARARs**

Page 2-3, First paragraph, second sentence.

The text notes that TCE and perchlorate are the primary chemicals of potential concern (COPC) but that other VOCs are also present in selected wells. As noted in the comment concerning Section 1.7.1, many, if not most, of the low- and

trace-level VOC detections that have been identified by the EPA appear to be associated with field sampling or laboratory conditions.

◆ **Section 3.2.1 – Hydraulic Control Options**

Page 3-2

The County agrees that hydraulic control of the Intermediate Aquifer by a series of extraction wells would be problematic. The thin and variable character of the aquifer would necessitate a large number of extraction wells whose operational conditions would likely be highly variable, inefficient, and potentially ineffective.

◆ **Evaluation of the Rialto-3 Aquifer Test**

Page 3-5

The text discusses the 2006 Rialto Well No. 3 aquifer pumping test data as evaluated by GeoLogic Associate (2007), and an alternative analysis completed by CH2MHill using the proprietary computer model, MLU. We note that the hydraulic conductivity on the eastern side of the basin is one of the parameters that can be refined during the remedial design phase for the remedy. Of note, and as detailed in the Updated Hydrogeologic Model report, when integrated in GeoLogic Associates' updated model, the Regional Aquifer horizontal (Ky) and vertical (Kv) hydraulic conductivity results obtained in the MLU analyses (120 ft/d and 6 ft/d, respectively) yielded essentially the same groundwater flow results as were achieved using GeoLogic Associates' Kh and Kv values of 80 ft/d and 8 ft/d (i.e., no significant flow or contaminant transport differences were identified in the updated model when the MLU values were input for the Regional Aquifer).

Although GLA's updated groundwater flow model yields similar hydraulic head calibration statistics for conductivity values calculated by the EPA versus those calculated by GLA, the modeled gradients and head elevations using the EPA's conductivity values are significantly lower than observed during the modeled time period. We believe the conductivity value of 80 feet/day results in a better match of modeled to observed conditions. In addition, the County recently completed an aquifer pumping test of Rialto Well No. 3. This updated data yielded hydraulic conductivity values that are similar to those that were derived from the 2006 pump tests. (GLA 2010, Appendix A)

◆ **Model Simulations to Evaluate the Effectiveness of Additional Extraction - General Approach**

Page 3-5, last paragraph.

The text indicates that an extraction well in addition to Rialto-02 will be needed to contain the impacts from the 160 Acre Site. We agree that an extraction well in addition to Rialto-02 would be appropriate, and understand that the optimal location for such a well will be developed as a component of the remedial design phase. Our experience with the Western Plume suggests that a location due south of the proposed EW-1 location could provide better plume containment efficiency than the EW-1 location shown in the RI/FS. Similarly, we understand that an optimal depth and screen interval for the extraction well will be developed as an

element of the remedial design, and it is our understanding that the depth anticipated in the RI/FS for EW-1 (650 feet) is intended as a placeholder subject to further analysis.

◆ **Pumping Assumptions at Non-Remedy Wells**

Page 3-7, Second paragraph

This section of the text discusses historical pump rates at the Rialto Well No. 3 treatment system. Please note that Rialto Well No. 3 has operated at approximately 1650 gpm (near its full capacity) since July 3, 2009. As detailed in the Updated Hydrogeologic Model (GLA, February 26, 2010), under current groundwater conditions, this rate is more than sufficient to fully contain the Western Plume consistent with the RAOs for that remedial action, and that lower pumping rates might be used in the future if current gradients and groundwater levels remain constant. The County is currently working with the RWQCB and the City of Rialto to identify pumping rates that assure plume containment and City water supply needs.

◆ **Page 3-8, First full paragraph**

We agree that the Eastern Plume remedy design should consider the increased groundwater gradient that will be produced by relatively continuous operation of Rialto-06. As indicated in USGS reports (e.g., Woolfenden and Koczot, 2001), the groundwater gradient at or near Rialto-06 increases naturally compared to areas upgradient of it and regular operation of Rialto-06 will exacerbate this condition. This could affect plume containment requirements near Rialto-02 and EW-1.

◆ **Page 3-8, Second paragraph**

The text includes a discussion of the pumping rates of the Fontana Water Company. Please note that the County's Updated Hydrogeologic Model (GLA, February 26, 2010) includes the corrected Fontana Water Company annual pumping rates. Moreover, the corrected pumping rates have not significantly affected the model results compared to results presented in 2007.

◆ **Model Limitations**

Page 3-10, Third bullet

The text notes that "very little data" exists regarding hydrogeologic conditions in the Intermediate Aquifer as a limitation of the model. This statement appears to reflect the relative lack of data regarding the Intermediate Aquifer within the Eastern Plume area; however, considerable hydrostratigraphic data has been developed by the County for this unit within the Western Plume area. This data gap for the Eastern Plume appears to be an important element of the remedial design phase. To avoid this statement being taken out of context it would be helpful to clarify that this statement refers to the Eastern Plume only, as the focus of the RI/FS is the northern portion of the Eastern Plume.

◆ **Full Containment during All Expected Groundwater Conditions**
Page 3-12

This section indicates that the maximum pumping rate required of the proposed interim remedy for the Eastern Plume would be approximately 3200 gpm. As discussed above, this value can likely be refined and improved during the remedial design phase when the location of the additional extraction well will be optimized. In addition to Eastern Plume containment, we also note that well EW-1 should be optimally located with respect to the location of the low concentration trough that exists between the Eastern and Western plumes to minimize potential adverse impacts on the Western Plume containment system being operated by the County.

◆ **Full Containment during All Groundwater Conditions**
Page 3-12

This section appears to suggest that high groundwater elevation conditions are not expected to occur for periods long enough to affect plume containment capabilities. However, even if these higher groundwater conditions were to re-occur, it is our expectation that if the location of the additional extraction well is optimized during the remedial design period, that a 3200 gpm containment system should be capable of capturing the plume under a wider range of conditions than is assumed in the RI/FS analysis.

Thank you again for the opportunity to comment on this report. Should you have any questions or require clarification of these comments, please do not hesitate to contact me or Gary Lass.

GeoLogic Associates



Ralph A. Murphy, CEG, CHg.
Vice-President

REFERENCES

- CH2MHill, 2010, "Remedial Investigation / Feasibility Study Report, B.F. Goodrich Superfund Site, Rialto, California", prepared for U.S. Environmental Protection Agency, Region 9, January 29.
- GeoLogic Associates, 2010, "Updated Hydrogeologic Model of Perchlorate Transport Conditions in the Northern Rialto-Colton Basin, San Bernardino County, California", prepared for County of San Bernardino Solid Waste Management Division, submitted to California Regional Water Quality Control Board - Santa Ana Region, February.
- _____, 2007a, "Hydrogeologic Model of Perchlorate Transport Conditions in the Northern Rialto-Colton Basin, San Bernardino County, California", prepared for County of San Bernardino Solid Waste Management Division, submitted to California Regional Water Quality Control Board - Santa Ana Region, March.
- Geosyntec Consultants Inc., 2008, "Goodrich Corporation Progress Report for the Month of February 2008, 160-Acre Parcel, Rialto, California", prepared for Goodrich Corporation, March 10.
- U.S. Environmental Protection Agency, 2009, "Summary of VOC and Perchlorate Analytical Results", email to interested parties, May.
- _____, 2008, "Summary of VOC and Perchlorate Analytical Results", email to interested parties, March.
- Woolfenden, L.R., and Koczot, K.M., 2001, "Numerical Simulation of Ground-Water Flow and Assessment of the Effects of Artificial Recharge in the RCB, San Bernardino County, California", U.S. Geological Survey Water Resources Investigations Report 00-4243.